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10/587,266

07/26/2006

Tadahiro Ohmi

427-109

4778

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09/11/2008

NIXON & VANDERHYE, PC

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ARLINGTON, VA 22203

EXAMINER

NGUYEN, COLETTE B

ART UNIT

PAPER NUMBER

4162

MAIL DATE

DELIVERY MODE

09/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/587,266

Applicant(s)

OHMI ET AL.

Examiner

COLETTE NGUYEN

Art Unit

4162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 02/04/08, 07/26/08, 08/19/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-4 and 6-11** are rejected under 35 U.S.C. 102(b) as anticipated by Breitbarth et al. (DE4319118).
3. **Regarding claim 1:** Breitbarth teaches an exhaust gas treatment method for treating exhaust gas containing at least one harmful gas component selected from the group consisting of organometallic gas, metal hydride gas and halide gas; wherein, at least a portion of the exhaust gas is made in an excited state, and is reacted with a reaction remover containing a calcium compound under reduced pressure.(Abstract" Process and apparatus for disposing of fluorocarbon containing compounds by conversion of these compounds in a plasma-chemical process in which the said compound are converted in the plasma with a solid with addition of oxygen, steam or hydrogen. The solid can be SiO₂ which may also be reacted as a wall of the reaction chamber. An additional coating with catalytically active substances and with alkali metal compound or alkaline earth metal compound enables an acceleration of reaction and formation of fluorides acceptable for landfill. The apparatus used is plasma reactor which contains the solid and can be operated with a high frequency, low frequency, direct current or microwave discharge".)

4. Regarding claims 2 and 9. Breithbarth specifies an exhaust gas treatment method according to claims 1 and 8, wherein the exhaust gas is reacted with a reaction remover in the presence of oxygen (pg 2, para.3 of the translation, "However, the addition of oxygen makes itself required also here" and " An additional admixture of oxygen resulted in an increased reactivity...").
5. Regarding claim 3. Breithbarth also teaches an exhaust gas treatment method wherein the exhaust gas is reacted with a reaction remover in the form of a viscous flow. (pg.2, para 6 of translation "...the plasma-chemical conversion according to invention of the fluorohalides compounds by plasma-chemical proves, which can be endothermic, to interact with a solid surface can be accomplished in the low pressure range...").
6. Regarding claims 4 and 10. Breithbarth discloses an exhaust gas treatment method wherein at least a portion of the exhaust gas is put into the excited state by plasma and /or ultraviolet light. (pg 1, para 6, "...With the help of a plasma-chemical process in interaction with a solid volatile and hydrolysable products,.." and "the apparatus used is plasma reactor which contains the solid and can be operated with a high frequency, low frequency, direct current or microwave discharge").Ultraviolet radiation device is a low frequency.
7. Regarding claims 6 and 11. Breithbarth discloses calcium oxide and/or calcium hydroxide as reaction remover. (pg 1, para. 10, "By introduction of alkali and/or alkaline –earth hydroxide or also oxides").

Art Unit: 1791

8. Regarding claim 7, Breithbarth teaches also a treatment wherein the harmful gas component is a hydride or halide of an element oxide of which is a solid.(pg.1, para.1 "The inversion relates to a method to the disposal of fluorine-carbonaceous and other fluorohalide compounds, with which the fluorine compound is a solid".

9. Regarding claim 8, Breithbarth discloses an exhaust gas treatment apparatus comprising a first exhaust pump for reducing the pressure of the exhaust gas, a second exhaust pump for reducing the pressure of the exhaust gas, an excitation unit arranged between the first exhaust pump and the second exhaust pump for putting the exhaust gas into an excited state, and a reaction removal unit containing a reaction remover for the removing the harmful gas component by reacting with the harmful gas component present in exhaust gas discharged from the excitation unit.(pg. 2, para. 9,10. "...an apparatus is convenient, which becomes operated between two vacuum pumps...Via the pressure differential and the suction power of the pumps the conversion and the optimum reaction conditions can be steered.")

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1791

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Breithbarth as applied to claim 1 above, and further in view of Jain et al. (US11/019843). Breithbarth discloses a method to treat exhaust gas having fluorohalide compounds using plasma method, applicable in micro-processing and semiconductor industries. However, he does not specifically mention that the exhaust gas also contains xenon and/or krypton. Jain in the meantime, discloses a method for recovering noble gas, such as krypton or xenon from a first gas mixture comprising a plurality of components such as noble gas and fluorocarbons, also applicable in semiconductor industry. It is obvious for one of ordinary skill in the art at the time of the invention to include xenon and krypton in the exhaust gas components to be treated or captured and reused as these noble gas are expensive and the apparatus components and set-up for both treating methods are similar.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Mc Neil can be reached on (571)-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1791

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLETTE NGUYEN/
Examiner, Art Unit 4162

CN
July 31, 2008

/Melvin C. Mayes/
Primary Examiner, Art Unit 1791